ABSTRACT BOOK

27TH INTERNATIONAL CONGRESS FOR CONSERVATION BIOLOGY

4TH EUROPEAN CONGRESS FOR CONSERVATION BIOLOGY

ICCB ECCB 2015

MISSION BIODIVERSITY: CHOOSING NEW PATHS FOR CONSERVATION

MONTPELLIER, FRANCE

2-6 AUGUST 2015

Society for Conservation Biology

ICCB ECCB 2015

ABSTRACT BOOK

The Society for Conservation Biology (SCB), a global society of conservation students and professionals, held in August 2015 in Montpellier, France its 27th International Congress for Conservation Biology, jointly hosted with the 4th European Congress for Conservation Biology. SCB celebrated its 30th birthday with its largest conference ever, comprised of 2063 attendees, 782 poster presentations and 943 oral presentations organized in 74 contributed sessions and 73 symposia sessions.

The theme of the conference "Mission Biodiversity: Choosing new paths for conservation" represented a response to the fact that the traditional methods for conserving biodiversity need to adapt and change to match the ever-changing nature and needs of today's world. It emphasized that the same rapid and ongoing biophysical and societal changes our world is facing also affect conservation science and practice.

We are asking very different questions than what we asked years ago, and using different methods to get the data we need to answer these questions. Increasingly, we work with people from different disciplines such as political science, computer science, economics, and social science, among others. We investigate different challenges that range from new pathogens and invasive species to new drivers of habitat loss such as oil palm production in West Africa to tangled socio-political issues such as the growing illegal trade of species and their parts on the internet. We are developing new methods and tools to address these challenges with on-the-ground conservation, such as using drones and new remote-sensing technology for monitoring and conservation enforcement or citizen science projects for collecting data and engaging the public. Unsurprisingly, one of the most common words in abstracts presented at ICCB-ECCB abstracts was "change." The ICCB-ECCB 2015 theme and its scientific content, summarized in this Abstract Book, document these changes and our need to keep up with, and even anticipate them for better conservation science and practice.

ICCB-ECCB 2015 featured several presentations, workshops and training courses that provided solutions to prevent or mitigate anthropogenic threats, and celebrated several exemplary success stories through the mini-plenaries from the Society's Distinguished Service and Early Career Conservationist awardees. ICCB-ECCB 2015 also featured an open debate starring Peter Kareiva and Clive Spash on Conservation Biology today; and how its fundamental principles and values are changing over time.

We would like to thank all participants, organizers and sponsors of ICCB-ECCB 2015 for their excellent work at the conference, and we look forward to many more conservation success stories in the coming years.

—Piero Visconti, Marit Wilkerson, Edward Game and Raphael Mathevet

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For any queries on regards to this book of abstracts please contact Nathan Spillman nspillman@conbio.org

Society for Conservation Biology

ABOUT THE SOCIETY FOR CONSERVATION BIOLOGY

SCB is a global community of conservation professionals with members working in more than 100 countries who are dedicated to advancing the science and practice of conserving Earth's biological diversity. The Society's membership comprises a wide range of people interested in the conservation and study of biological diversity: resource managers, educators, government and private conservation workers, and students.

SCB publishes the flagship peer-reviewed journal of the field, *Conservation Biology,* and the cutting-edge online journal, *Conservation Letters.* The Society provides many benefits to its community, including local, regional, and global networking, an active conservation-policy program, and free online access to publications for members in developing countries. SCB also administers a postdoctoral program, the David H. Smith Conservation Research Fellowship Program, sponsored by the Cedar Tree Foundation.

to identify and with limited tools for identification at the species level, being therefore poorly suitable for classical citizen science. Here we report the first results of an ongoing citizen science program where a specific group of participants, teachers from agricultural high schools, were involved in standardized surveys of bees, which were then identified to species level by taxonomist experts. Bees were sampled by pan traps during three years in 20 schools spread over France. Overall the dataset includes 70 collections (year × sampling site combinations) and 4574 specimens belonging to 195 species. All collections were dominated by a non-parasitic, soil-nesting species. In most cases this species was social and polylectic. A single species, Lasioglossum malachurum, dominated in 32 collections. Herein we confront this biological dataset to environmental data freely available at the national scale describing agricultural practices at the municipality level (High Nature Value index) and landscape context (Corine Land Cover). These analyses showed that (1) species richness increases with increasing proportion of herbaceous semi-natural elements in 100 m landscape sectors; (2) dominance (proportion of the most abundant species) decreases with increasing crop diversity; (3) the proportion of cavity nesting species and specimens increases when the intensity of fertilizer and pesticide use decreases. This expert-assisted citizen science program thus provides new insights on bee vulnerability to anthropogenic disturbances at a national scale.

DEMOGRAPHY AND SOCIALITY: ELASTICITY ANALYSIS IN A GORILLA POPULATION AFFECTED BY AN EBOLA OUTBREAK

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Identifying the life history traits that contribute the most to population growth rate is essential to assess persistence of endangered species, especially when catastrophic events perturb life history traits. In social species with complex links between demographic rates and social dynamics, it is challenging to analyze variation in growth rate when vital rates vary (i.e elasticity analysis). In this purpose, we studied wild gorillas that experienced Ebola outbreak. Decreases in survival and reproduction, as well as perturbations in social transfers and immigration, were detected during Ebola outbreak. We aimed to understand how the outbreak modified vital rates' elasticity and how it impacted long term population viability. Using an age, sex and social structured population matrix model, we performed elasticity analysis and investigated effects of variations in social structure and immigration patterns on gorilla population growth rate. Demographic parameters and social transfers were estimated for each epidemic period (before, during, after outbreak). Analysis of the asymptotic population growth rate showed that female matrix drove the population dynamics during non-epidemic periods, whereas it was the male matrix during the outbreak. Elasticity analysis indicated that variations in survival of adult females in breeding groups impacted the most the growth rate of population before and after outbreak. During outbreak, survival and social transfers of solitary silverbacks were the most critical parameters. Perturbation of initial social structure led to minor changes in population dynamics, while immigration was necessary to reach increasing population after outbreak. Simulations assuming that demographic parameters returned to pre-epidemic values immediately after outbreak suggested that the population will return to pre-epidemic size in 80 years. However, delayed immature males immigration, as detected with observational data, induced an additional 20 years delay.

177 - PARTICIPATORY AGENT-BASED SIMULATION TO FOSTER DIALOGUE AND BUILD TRUST BETWEEN LOCAL COMMUNITIES AND RESEARCHERS: A CASE STUDY ON BUSHMEAT HUNTING IN THE PERIPHERY OF KORUP NATIONAL PARK (SOUTH-WEST CAMEROON)

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To investigate the sustainability of bushmeat hunting activities in the region of the Korup National Park (South-West Cameroon), an agent-based model (ABM) representing snare trapping of blue duikers (Cephalophus monticola) was co-designed and used with local populations. Village meetings based on interactive computer simulations were structured in three successive steps. During the first step, an abstract representation of a village surrounded by a portion of forest was co-designed by directly manipulating the computer interface. Then, knowledge about the live-cycle traits and the behavior of blue duikers was shared through the demonstration of the individual-based population dynamics module of the ABM. The objective of the second step, introducing the hunting module of the ABM, was to elicit snare trapping practices through interactive simulation and to calibrate the hunting module by setting a value for the probability of a blue duiker to be caught by a snare trap. In a third step, a more realistic version of the ABM was introduced. The seven villages included in the process were located in the GIS-based spatial representation, and the number of 'Hunter'

agents for each village in the ABM was set according to the results of a survey. The demonstration of this realistic version triggered discussion about possible management scenarios based on reducing the number of hunters and/or the number of traps per hunter, but also on setting up temporal (rotating) reserves. A second round of village meetings was organized 8 months later to collectively explore with the finalized version of the ABM the pre-identified management options. The whole process resulted in enhancing the trust-building between the local communities and the research team. Some villagers established an association to promote activities related to environmental management, and the research team was given a plot of land to establish an accommodation belonging to Dschang University in the village.

151-DISEASE CONTROL IN WILDLIFE: EVALUATING A TEST AND CULL PROGRAMME FOR BOVINE TUBERCULOSIS IN AFRICAN BUFFALO

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Providing an evidence base for wildlife population management is difficult due to limited opportunities for experimentation and study replication at the population level. We utilised an opportunity to assess the outcome of a test and cull programme aimed at limiting the spread of Mycobacterium bovis in African buffalo. Buffalo act as reservoirs of M. bovis, the causative agent of bovine tuberculosis (BTB), which can have major economic, ecological and public health impacts through the risk of infection to other wildlife species, livestock and surrounding communities. BTB prevalence data were collected in conjunction with disease control operations in Hluhluwe-iMfolozi Park, South Africa, from 1999-2006. 4733 buffalo (250-950 per year) were tested for BTB using the single comparative intradermal tuberculin (SCIT) test. BTB prevalence was spatially and temporally variable, from 2.3% to 54.7%. Geographic area was a strong predictor of BTB transmission in HiP, owing to relatively stable herds and home-ranges. Herds experiencing more intensive and frequent captures showed reduced per capita disease transmission risk and less increase in herd prevalence over time. Disease hotspots did not expand spatially over time, and BTB prevalence in all but the hotspot areas was maintained between 10-15% throughout the study period. Our data suggest that HiP's test and cull programme was effective at reducing BTB transmission, with capture effort and interval found to be the crucial components of the programme. The programme was thus successful with respect to the original goals; however, there are additional factors that should be considered in future cost/benefit analyses and decision making. These findings may be utilised and expanded in future collaborative work between wildlife managers, veterinarians and scientists, in order to optimise wildlife disease control programmes and mitigate conflict at the interface of conservation, agricultural and urban areas.

ESTIMATING THE SUPPLY OF ECOSYSTEM SERVICES IN BOREAL FORESTS

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Human well-being is dependent on a number of critical processes that nature supplies, commonly referred to as ecosystem services. In particular, boreal forests provide several globally important services such as carbon storage and sequestration, as well as timber production. However, in order to maintain ecosystem services in landscapes we need methods to estimate the nature and magnitude of these services. Dynamic forest landscapes, with their long rotation periods,pose an interesting challenge when estimating the wide variety of ecosystem services that even single forest stands can provide. Measuring ecosystem services can be relatively straightforward for provisioning services such as the production of commodities (e.g. timber), but estimating maintenance and regulating services as well as cultural ones needs carefully thought out indicators. In order to accurately estimate the potential of a landscape to supply ecosystem services through time we need indicators that display both spatial and temporal sensitivity. A common way to estimate the ecosystem services supplied by landscapes has been through landcover classification, which is, however, a very coarse estimation method both spatially and temporally. In the case of managed forests we need indicators that can be quantified at the stand level or at even finer scales. Indicators also need to show temporal sensitivity since in the case of managed forests the composition of stands changes as the stand develops through time, and the supplied services can change through the rotation period of the stand. Here we present an overview of existing indicators that can be used to estimate the supply of provisioning, regulation and maintenance, and cultural services provided by boreal forests. In particular, we review spatially and temporally sensitive indicators that can be derived from reliable data based on commonly existing monitoring systems, and demonstrate their applicability in assessing ecosystem services.